

EXHIBIT A

Curriculum Vitae

Richard F. Jordan

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Personal Born 6/29/53, Quincy, MA, USA; Married; Karen Tracy Jordan; 3 children

Education

1981-1983 Postdoctoral Fellow; University of Wisconsin, Madison, WI (with C. P. Casey)
1981 Ph.D., Chemistry; Princeton University, Princeton, NJ (with J. R. Norton)
1975 B.A., High Honors; Chemistry, Rutgers University, Camden, NJ

Professional Experience

1999- Professor of Chemistry, The University of Chicago
1993-1999 Professor of Chemistry, The University of Iowa
1988-1992 Associate Professor of Chemistry, The University of Iowa
1988 Associate Professor of Chemistry, Washington State University
1983-1987 Assistant Professor of Chemistry, Washington State University
1975-1976 Research Chemist, ARCO Chemical Company, Glenolden, PA

Awards and Professional Activities

Frontiers in Chemistry Lectureship, University of Iowa (2002), Humphrey Lecturer, University of Vermont (2002), Organizer, Symp. on Recent Adv. in Organometallic Chem., Fall Nat. ACS Mtg. (2002), Editorial Advisory Board, *Journal of Organometallic Chemistry* (2002 - present), Frontiers Lecturer, Case Western University (2000), Organizer, Symp. on Advances in Polymer Synthesis, Fall Nat. ACS Mtg. (1999), Akron Polymer Group Lecturer (1998), British Petroleum Lecturer, UK (1998), Chair-Elect and Chair, Organometallic Subdivision, Inorganic Division, ACS (1997-98), Editorial Advisory Board, *Journal of Molecular Catalysis* (1997-present), University of Iowa Faculty Scholar Award (1996-98), Board of Directors, University of Iowa Research Foundation (1995-99), Editorial Advisory Board, *Organometallics* (1993-95), Frontiers Lecturer, Case Western University (1993), Organizer, Symp. on Chemistry of Electrophilic Metal Centers, Nat. ACS Mtg. (1992), Professeur Invité, University of Rennes, Rennes, France (1992), Alfred P. Sloan Research Fellow (1989-1991), Union Carbide Research Innovation Awards (1989, 1990), Athenaeum Honor Society, Rutgers University (1975), American Institute of Chemists Student Award, Rutgers University (1975)

General Research Interests

Organometallic and Inorganic Chemistry, Olefin Polymerization Catalysis, Polymer Chemistry, Stereoselective Synthesis and Catalysis, Metallocarborane Chemistry, Main Group Chemistry

Publications (f = full paper; c = commun.; n = note; r = review; p = conference proceeding)

(128)^f "Synthesis, Structures and Olefin Polymerization Behavior of Sterically Crowded Tris(pyrazolyl)borate Zirconium and Hafnium Complexes." Michiue, K.; Jordan, R. F.

Submitted for publication.

(127)^c "Coordination of Alkenes and Alkynes to a Cationic d⁰ Zirconocene Alkoxide Complex." Stoeckenius, E. J. III; Jordan, R. F. *J. Am. Chem. Soc.* **2003**, ASAP.

(126)^f "Reaction of Vinyl Chloride with Late Transition Metal Olefin Polymerization Catalysts." Foley, S. R.; Stockland, R. A. Jr.; Shen, H.; Jordan, R. F. *J. Am. Chem. Soc.* **2003**, in press.

(125)^c "Direct Comparison of the Olefin Polymerization Behavior of Ti^{III} and Ti^{IV} Tris(pyrazolyl)borate Catalysts." Michiue, K.; Jordan, R. F. *Submitted for publication.*

(124)^f "Molecular Structure and Vinyl Chloride Insertion of a Cationic Zirconium(IV) Acyl Carbonyl Complex." Shen, H.; Jordan, R. F. *Organometallics* **2003**, in press.

(123)^f "Reaction of Vinyl Chloride with Cationic Palladium Acyl Complexes." Shen, H.; Jordan, R. F. *Organometallics* **2003**, in press.

(122)^f "Reaction of Vinyl Chloride with Group 4 Metal Olefin Polymerization Catalysts." Stockland, R. A., Jr.; Foley, S. R.; Jordan, R. F. *J. Am. Chem. Soc.* **2003**, *125*, 796-809.

(121)^p "Reaction of Vinyl Chloride with Olefin Polymerization Catalysts." Stockland, R. A., Jr.; Shen, H.; Foley, S.; Jordan, R. F. *Polymeric Materials: Science and Engineering* **2002**, *87*, 39-46.

(120)^p "Olefin Polymerization by Tris(pyrazolyl)borate Group 4 Metal Catalysts." Michiue, K.; Murtuza, S.; Jordan, R. F. *Polymeric Materials: Science and Engineering* **2002**, *86*, 295-296.

(119)^p "Reaction of Single Site Olefin Polymerization Catalysts with Vinyl Chloride." Jordan, R. F. *Polymer Preprints (ACS)* **2001**, *42*, 829.

- (118)^p "Olefin Polymerization by Tris(pyrazolyl)borate Titanium Catalysts." Murtuza, S.; Casagrande, O. L. Jr.; Jordan, R. F. *Polymeric Materials: Science and Engineering* **2001**, *84*, 109-110.
- (117)^f "Cationic Indium Alkyl Complexes Incorporating Aminotroponimate Ligands." Delpech, F.; Guzei, I. A.; Jordan, R. F. *Organometallics* **2002**, *21*, 1167-1176.
- (116)^f "Synthesis of Ethylene-co-Norbornene Polymers Promoted by MAO Free Catalysts Based on Group 4 Dicarbolide Complexes." Grassi, A.; Maffei, G.; Milione, S.; Jordan, R. F. *Macromol. Chem. Phys.* **2001**, *202*, 1239-1245.
- (115)^f "Ethylene Polymerization Behavior of Tris(pyrazolyl)borate Ti(IV) Complexes." Murtuza, S.; Casagrande, O. L. Jr.; Jordan, R. F. *Organometallics* **2002**, *21*, 1882-1890.
- (114)^c "Vinyl C-H Activation Reactions of Vinyl Esters Mediated by B(C₆F₅)₃." Dash, A. K.; Jordan, R. F. *Organometallics* **2002**, *21*, 777-779.
- (113)^c "A Cationic Hydroxo-Bridged Dinuclear Gallium Complex." Guzei, I. A.; Dagorne, S.; Jordan, R. F. *Acta Crystallogr., Sect. C*: **2001**, *57*, 143-144.
- (112)^f "Cationic Aluminum Alkyl Complexes Incorporating Aminotroponimate Ligands." Korolev, A. V.; Ihara, E.; Guzei, I. A.; Young, V. G. Jr.; Jordan, R. F. *J. Am. Chem. Soc.* **2001**, *123*, 8291-8309.
- (111)^c "Main Group Metal Chlorobenzene Complexes." Korolev, A. V.; Delpech, F.; Dagorne, S.; Guzei, I. A.; Jordan, R. F. *Organometallics* **2001**, *20*, 3367-3369.
- (110)^f "A Dicationic Gallium-oxo-hydroxide Cage Compound." Swenson, D.; Dagorne, S.; Jordan, R. F. *Acta Crystallogr., Sect. C*: **2000**, *56*, 1213-1215.
- (109)ⁿ "Titanium Dicarbolide Complexes. Molecular Structures of (η⁵-C₂B₉H₁₁)(C₅Me₅)TiMe and (η⁵-C₂B₉H₁₁)(η⁵,η¹-C₅Me₄CH₂)Ti." Bei, X.; Young, V. G. Jr.; Jordan, R. F. *Organometallics* **2001**, *20*, 355-358.
- (108)^f "Solution Structures and Dynamic Properties of Chelated d⁰ Olefin Complexes {η⁵,η¹-C₅R₄SiMe₂N^tBu}Ti(OCMe₂CH₂CH₂CH=CH₂)⁺ (R = H, Me). Models for the {η⁵,η¹-C₅R₄SiMe₂N^tBu}Ti(R)(olefin)⁺ Intermediates in "Constrained Geometry" Catalysts." Carpentier, J.-F.; Maryin, V. P.; Luci, J.; Jordan, R. F. *J. Am. Chem. Soc.* **2001**, *123*, 898-909.

- (107)ⁿ "[Hydroxytris(pentafluorophenyl)borato-O][N-isopropyl-2-(isopropylamino)troponiminato-N]methylindium(III)." Guzei, I. A.; Delpech, F.; Jordan, R. F. *Acta Crystallogr., Sect. C: Cryst. Struct. Commun.* **2000**, C56, E327-328.
- (106)ⁿ "Tribenzyl-(η^5 -pentamethylcyclopentadienyl)-hafnium (IV)." Swenson, D. C.; Gou, Z.; Crowther, D. J.; Baenziger, N. C.; Jordan, R. F. *Acta Crystallogr., Sect. C: Cryst. Struct. Commun.* **2000**, C56, E313-314.
- (105)^f "Tantalum Mediated Oxidative Coupling of $C_2B_9H_{11}^{2-}$ Ligands. Synthesis and Characterization of $\{(\mu-H)(C_2B_9H_{10})_2\}TaCl_2$." Su, Y.-X.; Reck, C. E.; Guzei, I. A.; Jordan, R. F. *Organometallics* **2000**, 19, 4858-4861.
- (104)ⁿ "The [Bis(η^5 -cyclopentadienyl)zirconium(IV)(methyl)] [tris(pentafluorophenyl)(methyl)-borate] Ion Pair." Guzei, I. A.; Stockland, R. A., Jr.; Jordan, R. F. *Acta Crystallogr., Sect. C: Cryst. Struct. Commun.* **2000**, C56, 635-636.
- (103)ⁿ "Bis(isopropylamino)methylcarbenium Tetrakis(pentafluorophenyl)gallate." Guzei, I. A.; Dargone, S.; Jordan, R. F. *Acta Crystallogr., Sect. C: Cryst. Struct. Commun.* **2000**, C56, E134-135.
- (102)^c "General Synthesis of Racemic Me_2Si -Bridged Bis-indenyl Zirconocene Complexes." Zhang, X.; Zhu, Q.; Guzei, I. A.; Jordan, R. F. *J. Am. Chem. Soc.* **2000**, 122, 8093-8094.
- (101)^f " d^0 Metal Olefin Complexes. Synthesis, Structures and Dynamic Properties of $(C_5R_5)_2Zr(OCMe_2CH_2CH_2CH=CH_2)^+$ Complexes: Models for the Elusive $(C_5R_5)_2Zr(R)(olefin)^+$ Intermediates in Metallocene-Based Olefin Polymerization Catalysis." Carpentier, J.-F.; Wu, Z.; Lee, C. W.; Strömberg, S.; Christopher, J. N.; Jordan, R. F. *J. Am. Chem. Soc.* **2000**, 122, 7750-7767.
- (100)^c "Reaction of Vinyl Chloride with a Prototypical Metallocene Catalyst: Stoichiometric Insertion and β -Cl elimination Reactions with *rac*-(EBI)ZrMe⁺ and Catalytic Dechlorination/Polymerization to Oligopropylene by *rac*-(EBI)ZrMe₂/MAO." Stockland, R. A., Jr.; Jordan, R. F. *J. Am. Chem. Soc.* **2000**, 122, 6315-6316.
- (99)^c "Halocarbon and Arene Coordination of Lithium(I) in the Crystal Structure of [(1-Anilino-3-phenyliminopropenyl)(chloro)(methyl)aluminum]di[lithium-(tetrakis(pentafluorophenyl)-

borate)] Benzene Solvate." Guzei, I. A.; Radzewich, C. E.; Jordan, R. F. *Acta Crystallogr., Sect. C: Cryst. Struct. Commun.* **2000**, C56, 279-281.

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(96)^f "Neutral and Cationic Palladium(II) Bis-pyrazolyl-methane Complexes." Tsuji, S.; Swenson, D. C.; Jordan, R. F. *Organometallics* **1999**, 18, 4758-4764.

(95)^f "Synthesis and Structures of Cationic Aluminum and Gallium Amidinate Complexes." Dagorne, S.; Guzei, I. A.; Coles, M. P.; Jordan, R. F. *J. Am. Chem. Soc.* **2000**, 122, 274-289.

(94)ⁿ "Sterically Crowded Gallium Amidinate Complexes." Dagorne, S.; Jordan, R. F.; Young, V. G. Jr. *Organometallics* **1999**, 18, 4619-4623.

(93)^c "Three-Coordinate Cationic Aluminum Alkyl Complexes Incorporating β -Diketimate Ligands." Radzewich, C. E.; Guzei, I. A.; Jordan, R. F. *J. Am. Chem. Soc.* **1999**, 121, 8673-8674.

(92)^f "Aluminum *ansa*-Indenyl Compounds. Synthesis, Structures, Dynamic Properties and Application in the Synthesis of Group 4 *ansa*-Metallocenes." Thiagarajan, B.; Jordan, R. F.; Young, V. G. Jr. *Organometallics* **1999**, 18, 5347-5359.

(91)^c "Reversible Ethylene Cycloaddition Reactions of Cationic Aluminum β -Diketimate Complexes." Radzewich, C. E.; Coles, M. P.; Jordan, R. F., *J. Am. Chem. Soc.* **1998**, 120, 9384-9385.

(90)^c "Cationic Aluminum Alkyl Complexes Incorporating Aminotroponimate Ligands." Ihara, E.; Young, V. G. Jr.; Jordan, R. F. *J. Am. Chem. Soc.* **1998**, 120, 8277-8278.

(89)^f "Aluminum Complexes Incorporating Bulky Nitrogen and Sulfur Donor Ligands." Coles, M. P.; Swenson, D. C.; Jordan, R. F.; Young, V. G. Jr. *Organometallics* **1998**, 17, 4042-4048.

- (88)^f "Aluminum Alkyl Complexes Containing Guanidinate Ligands." Aeilts, S. L.; Coles, M. P.; Swenson, D. C.; Jordan, R. F.; Young, V. G. Jr. *Organometallics* **1998**, *17*, 3265-3270.
- (87)^f "Formation of Novel *Ansa*-Carborane Alkoxide Complexes by Carbonylation of (C₅Me₅)(η^5 -C₂B₉H₁₁)TiMe." Bei, X.; Kreuder, C.; Swenson, D. C.; Jordan, R. F.; Young, V. G. Jr. *Organometallics* **1998**, *17*, 1085-1091.
- (86)^c "Synthesis, Structure, Dynamic Properties and Indenyl Transfer Reactions of {AlMe₂(THF)-indenyl}₂SiMe₂." Thiagarajan, B.; Jordan, R. F.; Young, V. G. Jr. *Organometallics* **1998**, *17*, 281-283.
- (85)^f "Neutral and Cationic Group 4 Metal Compounds Containing Octamethyl-dibenzo-tetraaza-annulene Ligands. Synthesis and Reactivity of (Me₈taa)MX₂ and (Me₈taa)MX⁺ Complexes (M = Zr, Hf; X = Cl, hydrocarbyl, NR₂, OR)." Martin, A.; Uhrhammer, R.; Gardner, T. G.; Jordan, R. F.; Rogers, R. D. *Organometallics* **1998**, *17*, 382-397.
- (84)^p "Cationic Aluminum Alkyls: Transition-Metal-Free Olefin Polymerization Catalysts." Jordan, R. F. in *Proceedings of the World Metallocene Conference*; Catalyst Consultants Inc., **1998**, II-1 - II-6.
- (83)^c "In Situ Activation of *rac*-(SBI)Zr(NMe₂)₂ for the Polymerization of Propylene." Kim, I.; Jordan, R. F. *Polymer Bulletin* **1997**, *39*, 325-331.
- (82)^f "Stereoselective Propene Insertion Reactions of *rac*-(EBI)Zr(η^2 -pyridyl)⁺ Complexes." Dagorne, S.; Rodewald, S.; Jordan, R. F. *Organometallics* **1997**, *16*, 5541-5555.
- (81)^f "Olefin Polymerization Promoted by Monodicarbollide Complexes of Group 4 Metals." Saccheo, S.; Gioia, G.; Grassi, A.; Bowen, D. E.; Jordan, R. F. *J. Mol. Catal. A* **1998**, *128*, 111-118.
- (80)ⁿ "A Chiral Diazepine. 2,3-Dihydro-5,7-dimethyl-2,3-cyclohexano-1,4-diazepine." Black, D. G.; Swenson, D. C.; Jordan, R. F.; *Acta. Cryst. C*, **1998**, *C54*, 1030-1033.
- (79)^f "Synthesis and Structures of Mono- and Bis-Amidinate Complexes of Aluminum." Coles, M. P.; Swenson, D. C.; Jordan, R. F.; Young, V. G. Jr. *Organometallics* **1997**, *16*, 5183-5194.
- (78)^c "Catalytic Dimerization of Terminal Alkynes by a Hafnium Carboranyl Complex. A "Self-Correcting" Catalyst." Yoshida, M.; Jordan, R. F. *Organometallics* **1997**, *16*, 4508-4510.

- (77)^c "Cationic Aluminum Alkyl Complexes Incorporating Amidinate Ligands. Transition-Metal-Free Ethylene Polymerization Catalysts." Coles, M. P.; Jordan, R. F. *J. Am. Chem. Soc.* **1997**, *119*, 8125-8126.
- (76)^f "Synthesis and Structures of *rac*-Me₂Si(η⁵-1-indenyl)₂Hf(NMe₂)₂ and {Me₂Si(η⁵-1-indenyl)(η³-2-indenyl)}Hf(NMe₂)₂." Christopher, J. N.; Jordan, R. F.; Petersen, J. L.; Young, V. G. Jr. *Organometallics* **1997**, *16*, 3044-3050.
- (75)^c "Synthesis, Structure and Reactivity of a Novel Hafnium Carboranyl Hydride Complex." Yoshida, M.; Crowther, D. J.; Jordan, R. F. *Organometallics* **1997**, *16*, 1349-1351.
- (74)^f "New Chiral Amide Ligands Derived from (±)-*trans*-1,2-Diaminocyclohexane. Applications in Ti(IV) Chemistry." Tsuie, B.; Swenson, D. C.; Jordan, R. F. *Organometallics* **1997**, *16*, 1392-1400.
- (73)^f "Synthesis, Structures, Bonding and Ethylene Reactivity of Group 4 Metal Alkyl Complexes Incorporating 8-Quinololato Ligands." Bei, X.; Swenson, D. C.; Jordan, R. F. *Organometallics* **1997**, *16*, 3282-3302.
- (72)^f "Synthesis, Structures, Dynamics and Olefin Polymerization Behavior of Group 4 Metal (pyCR₂O)₂M(NR₂)₂ Complexes Containing Bidentate Pyridine-Alkoxide Ancillary Ligands." Kim, I.; Nishihara, Y.; Jordan, R. F.; Rogers, R. D.; Rheingold, A. L.; Yap, G.P.A. *Organometallics* **1997**, *16*, 3314-3323.
- (71)^f "Neutral and Cationic Zirconium Benzyl Complexes Containing Bidentate Pyridine-Alkoxide Ligands. Synthesis and Olefin Polymerization Chemistry of {pyCR₂O}₂Zr(CH₂Ph)₂ and {pyCR₂O}₂Zr(CH₂Ph)⁺ Complexes." Tsukahara, T.; Swenson, D. C.; Jordan, R. F. *Organometallics* **1997**, *16*, 3303-3313.
- (70)^p "Binding and Activation of Olefins by Metallocene Catalysts." Jordan, R. F. in *Proceedings of the World Metallocene Conference*; Catalyst Consultants Inc., **1996**, II-1 - II-8.
- (69)^p "New Approaches to Metallocene-Based Olefin Polymerization Catalysis." Jordan, R. F.; Diamond, G. M.; Christopher, J. N.; Kim, I. *ACS Polymer Preprints* **1996**, *37*, 256.

- (68)^f "Structural Trends in Group 4 Metal Tetraaza Macrocyclic Complexes. Molecular Structures of (Me₄taen)Zr(O^tBu)₂ and (Me₄taen)Hf(NMe₂)₂." Black, D. G.; Jordan, R. F.; Rogers, R. D. *Inorg. Chem.* **1997**, *36*, 103-108.
- (67)^f "Synthesis of Me₂Si-Bridged *ansa*-Zirconocenes via Amine Elimination." Diamond, G. M.; Jordan, R. F.; Petersen, J. L. *Organometallics* **1996**, *15*, 4045-4053.
- (66)^f "Synthesis, Structure and Reactivity of *rac*-Me₂Si(indenyl)₂Zr(NMe₂)₂." Christopher, J. N.; Diamond, G. M.; Jordan, R. F.; Petersen, J. L. *Organometallics* **1996**, *15*, 4038-4044.
- (65)^f "Synthesis of Group 4 Metal *rac*-(EBI)M(NR₂)₂ Complexes via Amine Elimination. Scope and Limitations." Diamond, G. M.; Jordan, R. F.; Petersen, J. L. *Organometallics* **1996**, *15*, 4030-4037.
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- (63)^c "Propylene Polymerization with *ansa*-Metallocene Amide Complexes." Kim, I.; Jordan, R. F. *Macromolecules* **1996**, *29*, 489-491.
- (62)^p "Synthesis of *Ansa*-Metallocenes" Diamond, G. D.; Rodewald, S.; Jordan, R. F. in *Proceedings of the World Metallocene Conference*; Catalyst Consultants Inc., **1995**, III-2 - III-6.
- (61)^c "Early Metal Dicarbolide Chemistry. Characterization of an Unusual Bridging C₂B₉H₁₁²⁻ Bonding Mode in (C₅Me₅)₂(C₂B₉H₁₁)₂Hf₂Me₂." Crowther, D. J.; Swenson, D. C.; Jordan, R. F. *J. Am. Chem. Soc.* **1995**, *117*, 10403-10404.
- (60)^f "Early Metal Carborane Chemistry. Generation and Reactivity of (C₅Me₅)(η⁵-C₂B₉H₁₁)TiMe." Kreuder, C.; Jordan, R. F.; Zhang, H. *Organometallics* **1995**, *14*, 2993-3001.
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(Me₄taen)ZrX₂(NHMe₂) (X = Cl, CCPh) Complexes." Black, D. G.; Swenson, D. C.; Jordan, R. F.; Rogers, R. D. *Organometallics* **1995**, *14*, 3539-3550.

(57)^c "Models for the Elusive Cp₂Zr(R)(olefin)⁺. Characterization of the d⁰ Metal Olefin Complex Cp₂Zr(OCMe₂CH₂CH₂CH=CH₂)⁺." Wu, Z.; Jordan, R. F.; Petersen, J. L. *J. Am. Chem. Soc.* **1995**, *117*, 5867-5868.

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(55)^p "New Cationic Group 4 Metal Alkyl Complexes." Tjaden, E. B.; Jordan, R. F. *Makromol. Chem., Macromol. Symp.* **1995**, *89*, 231-235.

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(52)ⁿ "Anionic Bis-Dicarbollide Ta(V) Complexes with Bent-Metallocene Structures." Uhrhammer, R.; Su, Y.; Swenson, D. C.; Jordan, R. F. *Inorg. Chem.* **1994**, *33*, 4398-4402.

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(48)^r "Cationic Organozirconium and Organohafnium Compounds." Guram, A. S.; Jordan, R. F. in *Comprehensive Organometallic Chemistry, Second Edition*, **1995**, Volume 4, 589-625.

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- (46)^f "Agostic Zr---C β -Si Interactions in $(C_5H_4Me)_2Zr(CH_2CH_2SiMe_3)(L)^+$ Complexes ($L = THF, CH_3CN, PMe_3$). Evidence for an Organometallic γ -Silicon Effect." Alelyunas, Y. W.; Baenziger, N. C.; Bradley, P. K.; Jordan, R. F. *Organometallics* **1994**, *13*, 148-156.
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- (44)^c "Cationic d^0 Metal Alkyls Incorporating Tetraaza-macrocyclic Ancillary Ligands. Synthesis and Reactivity of $(Me_8taa)M(R)^+$ and $(Me_4taen)M(R)^+$ ($M = Zr, Hf$) Complexes." Uhrhammer, R.; Black, D. G.; Gardner, T. G.; Olsen, J. D.; Jordan, R. F. *J. Am. Chem. Soc.* **1993**, *115*, 8493-8494.
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Patents and Pending Applications

- (13) "Preparation of Transition Metal Hydrotris(pyrazolylborate) Derivative Complexes as Catalysts for Olefin Polymerization." Braganca, A.; Zacca, J.; Casagrande, O., Jr.; Casagrande, A.; Gil, M.; Jordan, R. F.; Brazilian Patent BR 9904045, *Chem. Abs.* 135:227401; **2001**.
- (12) "Novel Synthesis of *ansa*-Metallocene Catalysts." Jordan, R. F.; Diamond, G. M.; Rodewald, S.; Canadian Patent 2,186,736; **2000**.
- (11) "Synthesis of Ansa-Metallocene Catalysts." Jordan, R. F.; Zhang, X.; US Patent 6,153,777; **2000**.
- (10) "Metallocene Synthesis." Jordan, R. F.; Thiagarajan, B.; Zhang, X.; US Patent 5,998,643; **1999**.
- (9) "Polymerization of Epoxides with Group 13 Catalysts." Jordan, R. F.; Coles, M. P.; Ihara, E.; Dagorne, S.; U.S. patent pending; Serial No. 09/219,192.
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- (8) "Novel Synthesis of *ansa*-Metallocene Catalysts." Diamond, G. M.; Jordan, R. F.; European Patent 0763044B, **2001** (based on PCT US95/06485).
- (7) "Cationic Group 13 Complexes Incorporating Bidentate Ligands as Polymerization Catalysts." Jordan, R. F.; Coles, M. P.; Ihara, E.; Dagorne, S.; US Patent 6,228,794; **2001**.
- (6) "Cationic Aluminum Alkyl Complexes Incorporating Amidinate Ligands as Polymerization Catalysts." Jordan, R. F.; Coles, M. P.; US Patent 5,973,088; **1998**.
- (5) "Cationic Aluminum Alkyl Complexes Incorporating Amidinate Ligands as Polymerization Catalysts." Jordan, R. F.; Coles, M. P.; US Patent 5,777,120; **1998**.
- (4) "Olefin Polymerization With Direct Use of *ansa*-Metallocene Amide Complexes as Catalysts." Kim, I.; Jordan, R. F.; US Patent 6,207,608; **2001**.
- (3) "Novel Synthesis of *ansa*-Metallocene Catalysts." Diamond, G. M.; Jordan, R. F.; US Patent 5,597,935; **1997**.

(2) "Synthesis of Ansa-Metallocene Catalysts." Jordan, R. F.; Rodewald, S.; Diamond, G. M.; US Patent 5,495,035; **1996**.

(1) "Cyclopentadienyl Dicarbollide Complexes of Ti, Zr, and Hf." Jordan, R. F.; Crowther, D. J.; US Patent 5,214,173; **1993**.

Invited Professional Presentations

(251) Department of Polymer Science & Engineering, University of Massachusetts, Amherst, MA, 12/06/02. "Reactions of Single Site Olefin Polymerization Catalysts with Polar Monomers."

(250) Illinois Institute of Technology, Chicago, IL, 11/20/02. "Single-Site Olefin Polymerization Catalysis: Recent Advances and Current Challenges."

(249) University of Texas, Arlington, TX, 11/8/02. "Single-Site Olefin Polymerization Catalysis: Recent Advances and Current Challenges."

(248) Frontiers in Chemistry Lectureship, University of Iowa, Iowa City, IA, 10/2-10/5/02. (i) "Non-Classical Metal Olefin Complexes and Olefin Polymerization." (ii) "Holy Grails and Spider Webs: Toward Insertion Polymerization of Polar Vinyl Monomers." (iii) "Adventures in Main Group Chemistry."

(247) 21st Esther and Bingham J. Humphrey Symposium, University of Vermont, Burlington, VT, 9/28/02. "Single-Site Olefin Polymerization Catalysis: Recent Advances and Current Challenges."

(246) Symposium on "Catalysis as a Route to New Materials," Center for Catalysis and Surface Science, Northwestern Univ., Evanston, IL, 9/10/02. "Progress Toward the Development of Catalysts for the Insertion Polymerization of Polar Monomers."

(245) Symposium on "Recent Advances in Organometallic Chemistry," 224th National ACS Mtg., Boston, MA, 8/19 - 8/23/02. "Non-chelated zirconium(IV) Alkene Complexes."

(244) Symposium on "Control of Polymer Stereochemistry Using Single-Site Catalysts," 224th National ACS Mtg., Boston, MA, 8/19 - 8/23/02. "Reaction of Vinyl Chloride with Olefin Polymerization Catalysts."

- (243) Bayer Corp., Sarnia, Ontario, CA, 6/11/02. "Strategies for the Development of Catalysts for Polar Monomer Polymerization and Copolymerization."
- (242) Metallocene Intensive Short Course (Catalyst Consulting Group), Houston, TX, 6/5/02.
- (241) Massachusetts Institute of Technology, Cambridge, MA, 5/1/02. "Reactions of Single Site Olefin Polymerization Catalysts with Vinyl Chloride."
- (240) Symposium on "Non-Metallocene Single-Site Polymerization Catalysts," 223rd National ACS Mtg., Orlando, FL, 4/6 - 4/8/02. "Olefin Polymerization by Tris(pyrazolyl)borate Group 4 Metal Complexes."
- (239) Albermarle Corp., Baton Rouge, LA, 2/8/02. "Cationic Aluminum Alkyl Complexes."
- (238) Louisiana State University, Baton Rouge, LA, 2/7/02. "Recent Advances and Current Challenges in Single-Site Olefin Polymerization Catalysis."
- (237) University of Toledo, Toledo, OH, 1/14/02. "Reactions of Single Site Olefin Polymerization Catalysts with Vinyl Chloride."
- (236) Cornell University, Ithaca, NY, 11/29/01. "Reactions of Single-Site Olefin Polymerization Catalysts with Polar Monomers."
- (235) Bayer Corp., Leverkusen, Germany, 11/27/01. "Reactions of Single-Site Olefin Polymerization Catalysts with Vinyl Chloride."
- (234) Dow Chemical, Midland, TX, 11/19/01. "Reactions of Single-Site Olefin Polymerization Catalysts with Vinyl Chloride."
- (233) "Polyolefins III", Rohnert Park, CA., IL, 10/7 - 10/10/01. "Reactions of Single Site Olefin Polymerization Catalysts with Polar Monomers."
- (232) Symposium on "PVC and Related Polymers: Chemistry and Applications," 222nd National ACS Mtg., Chicago, IL, 8/25 - 8/29/01. "Reactions of Single Site Olefin Polymerization Catalysts with Vinyl Chloride."
- (231) Symposium on "Multidentate Ligand Design," 222nd National ACS Mtg., Chicago, IL, 8/25 - 8/29/01. "Low Coordinate Cationic Aluminum Complexes Containing Bidentate Nitrogen Donor Ligands."

- (230) Gordon Conference on Inorganic Chemistry, Newport, RI, 7/15-7/20/01. "Cationic Aluminum Alkyl Complexes."
- (229) Metallocene Intensive Short Course (Catalyst Consulting Group), Houston, TX, 5/16/01.
- (228) Symposium on "New Developments in the Chemistry of Group 13 Elements," ACS 221st National Mtg., San Diego, CA, 4/1 - 4/5/01. "Low Coordinate Cationic Group 13 Alkyl Complexes."
- (227) Symposium on "Materials Science in the 21st Century," ACS 221st National Mtg., San Diego, CA, 4/1 - 4/5/01. "Reactions of Single-Site Olefin Polymerization Catalysts with Functionalized Olefins."
- (226) Symposium on "New Polyolefin Copolymers: Synthesis Properties and Applications," ACS 221st National Mtg., San Diego, CA, 4/1 - 4/5/01. "Olefin Polymerization Catalyzed by Tris(pyrazolyl)borate Titanium Complexes."
- (225) University of Louisville, Louisville, KY, 3/30/01. "Recent Metallocene Chemistry: Zr(IV) Olefin Complexes, Chiral Metallocenes and Polar Monomers."
- (224) University of Rochester, Rochester, NY, 3/14/01. "Recent Metallocene Chemistry: Zr(IV) Olefin Complexes, Chiral Metallocenes and Polar Monomers."
- (223) Equistar Chemical Company, Cincinnati, OH, 2/22/01. "Recent Metallocene Chemistry: Zr(IV) Olefin Complexes, Chiral Metallocenes and Polar Monomers."
- (222) University of Notre Dame, Notre Dame, IN, 2/15/01. "Recent Metallocene Chemistry: Zr(IV) Olefin Complexes, Chiral Metallocenes and Polar Monomers."
- (221) Symposium on "Main Group Chemistry: Low Valent, Low Coordination Number and Cluster Compounds," 2000 International Chemical Congress of Pacific Basin Societies, Honolulu, HA, 12/14 - 12/19/00. "Three-Coordinate Cationic Aluminum Compounds."
- (220) University of Zurich, Zurich, Switzerland, 11/10/00. "Recent Advances in Metallocene Catalysis: Zr(IV) Olefin Complexes, Chiral Catalysts and Reactions with Functional Monomers."

- (219) University of Konstanz, Konstanz, Germany, 11/8/00. "Recent Advances in Metallocene Catalysis: Zr(IV) Olefin Complexes, Chiral Catalysts and Reactions with Functional Monomers."
- (218) BASF Conference on Insertion Polymerization, Ludwigshafen, Germany, 9/28 - 9/29/00. "Recent Organometallic Chemistry Relevant to Olefin Polymerization Catalysis."
- (217) Symposium on "Catalysis and Polymers," SFC 2000, Rennes, France, 9/18 - 9/19/00. "Reactions of Vinyl Chloride with Single-Site Olefin Polymerization Catalysts."
- (216) Metallocene Intensive Short Course (Catalyst Consulting Group), Houston, TX, 6/7/00.
- (215) "Frontiers in Chemistry" Lecture, Case Western University, Cleveland, OH, 2/24/00. "Cationic Transition Metal Alkyl Species in Olefin Polymerization."
- (214) B. F. Goodrich Company, Brecksville, OH, 2/24/00. "Recent Advances in Metallocene Chemistry"
- (213) Indiana University, Bloomington, IN, 2/18/00. "Cationic Transition Metal and Main Group Metal Alkyl Complexes in Olefin Polymerization."
- (212) Goodyear Tire and Rubber Company, Akron, OH, 12/7/99. " d^0 -Metal Olefin Complexes."
- (211) Workshop on "Advanced Organometallics Design," Philadelphia, PA, 11/14/99. "Metallocene and Single-Site Catalysts for Olefin Polymerization."
- (210) Soga Memorial Symposium on "Coordination Catalysis and Polymerization for the Next Century," Tokyo Institute of Technology, Tokyo, Japan, 10/30/99. " d^0 -Metal Olefin Complexes."
- (209) Seventh SPSJ International Polymer Conference, Yokohama, Japan, 10/27/99. "Cationic Aluminum Alkyl Complexes: Transition-Metal-Free Olefin Polymerization Catalysts."
- (208) Mitsui Chemical Co., Chiba, Japan, 10/26/99. "Cationic Aluminum Alkyl Complexes: Transition-Metal-Free Olefin Polymerization Catalysts."
- (207) Symposium on "Advances in Polymer Synthesis by Metallocene, Ziegler-Natta and Related Catalysts," 218th ACS Nat. Mtg., New Orleans, LA 8/22-8/24/99. " d^0 -Metal Olefin Complexes."

- (206) Metallocene Intensive Short Course (Catalyst Consulting Group), Houston, TX, 6/8/99.
- (205) Metallocene Intensive Short Course, Exxon Chemical Co., Baytown, TX, 6/7/99.
- (204) Symposium on "Metallocenes and Beyond: The New Catalysis," SPE ANTEC '99, 5/5/99, New York, NY. "Cationic Transition Metal and Main Group Metal Alkyl Complexes in Olefin Polymerization."
- (203) Symposium on "Olefin Polymerization Catalysis," 4/30/99, University of Pennsylvania, Philadelphia, PA. "d⁰ Olefin Complexes."
- (202) DuPont Inc., Wilmington, DE, 4/29/99. "Cationic Aluminum Alkyl Complexes: Transition-Metal-Free Olefin Polymerization Catalysts."
- (201) Industrial Technology Research Institute, Hsinchu, Taiwan, 4/13/99. "Catalytic Chemistry of Carborane-Based Group 4 Metallocene Complexes."
- (200) Symposium on "Advanced Catalysis: New Polymer Syntheses and Modifications," 217th National ACS Mtg., Anaheim, CA, 3/21 - 3/23/99. "Cationic Aluminum Alkyl Complexes: Transition-Metal-Free Olefin Polymerization Catalysts."
- (199) Southern Methodist University, Dallas, TX, 3/4/99. "Cationic Aluminum Alkyl Complexes: Transition-Metal-Free Olefin Polymerization Catalysts."
- (198) Union Carbide Corp., Houston, TX, 3/3/99. "Cationic Aluminum Alkyl Complexes."
- (197) Exxon Chemical Co., Baytown, TX, 2/19/99. "Cationic Aluminum Alkyl Complexes."
- (196) University of Wisconsin, Dept. of Chemical Engineering, Madison, WI, 2/4/99. "Cationic Metal Alkyl Complexes and Single-Site Olefin Polymerization Catalysis."
- (195) University of Wisconsin, Dept. of Chemistry, Madison, WI, 2/3/99. "Cationic Aluminum Alkyl Complexes: Transition-Metal-Free Olefin Polymerization Catalysts."
- (194) Goodyear Tire and Rubber Company, Akron, OH, 1/29/99. "Cationic Aluminum Alkyl Complexes."
- (193) California Institute of Technology, Pasadena, CA, 11/23/98. "Cationic Aluminum Alkyl Complexes: Transition-Metal-Free Olefin Polymerization Catalysts."

- (192) Symyx Technologies, Santa Clara, CA, 11/20/98. "Cationic Aluminum Alkyl Complexes: Transition-Metal-Free Olefin Polymerization Catalysts."
- (191) University of California, Berkeley; Berkeley, CA, 11/20/98. "Cationic Transition Metal and Main Group Metal Alkyl Complexes in Olefin Polymerization."
- (190) Rockford College/Rock River Section ACS Mtg., Rockford, IL, 11/11/98. "Organometallic Catalysts for Olefin Polymerization."
- (189) University of Florida, Gainesville, FL, 11/6/98. "Cationic Transition Metal and Main Group Metal Alkyl Complexes in Olefin Polymerization."
- (188) Symposium on "Advanced Polyolefin Technologies," 54th Southwest Regional ACS . Mtg., Baton Rouge, LA, 11/2-11/3/98. "Transition-Metal-Free Olefin Polymerization Catalysts."
- (187) Symposium on "Advanced Polyolefin Technologies," 54th Southwest Regional ACS . Mtg., Baton Rouge, LA, 11/2-11/3/98. "Tutorial on Single Site Olefin Polymerization Catalysts."
- (186) 22nd Annual Symposium, Macromolecular Science and Engineering Center, University of Michigan, Ann Arbor, MI, 10/22/98. "Cationic Transition Metal and Main Group Metal Alkyl Complexes in Olefin Polymerization."
- (185) University of Michigan, Ann Arbor, MI, 9/24/98. "Cationic Transition Metal and Main Group Metal Alkyl Complexes in Olefin Polymerization."
- (184) International Symposium for "Metalorganic Catalysts for Synthesis and Polymerization," Hamburg, Germany, 9/13-9/17/98. "Cationic Transition Metal and Main Group Metal Alkyl Complexes in Olefin Polymerization."
- (183) DSM Corporation, Geleen, The Netherlands, 9/11/98. "Cationic Aluminum Alkyl Complexes: Transition-Metal-Free Olefin Polymerization Catalysts."
- (182) Eastman Chemical Company, Kingsport, TN, 9/4/98. "Cationic Aluminum Alkyl Complexes: Transition-Metal-Free Olefin Polymerization Catalysts."

- (181) Westfälische Wilhelms-Universität, Münster, Germany, 8/25/98. "Cationic Transition Metal and Main Group Metal Alkyl Complexes in Olefin Polymerization."
- (180) Symposium des Katalyseverbundes NRW, "Trends in Catalysis," Westfälische Wilhelms-Universität, Münster, Germany, 8/24/98. "Catalytic Chemistry of Carborane-Based Group 4 Metallocene Complexes."
- (179) University of Chicago, Chicago, IL, 6/26/98. "Cationic Transition Metal and Main Group Metal Alkyl Complexes in Olefin Polymerization."
- (178) *MetCon 98*: Sixth Annual Worldwide Metallocene Conference, Houston, TX, 6/10-6/11/98. "Cationic Aluminum Alkyl Complexes: Transition-Metal-Free Olefin Polymerization Catalysts."
- (177) Metallocene Intensive Short Course (Catalyst Consulting Group), Houston, TX, 6/9/98.
- (176) Symposium on "Polymers: The Way Forward," 30th Central Regional ACS . Mtg., Cleveland, OH, 5/27-5/28/98. "Cationic Aluminum Alkyl Complexes: Transition-Metal-Free Olefin Polymerization Catalysts."
- (175) Lubrizol Corporation, Wickliffe, OH, 5/26/98. "Cationic Aluminum Alkyl Complexes: Transition-Metal-Free Olefin Polymerization Catalysts."
- (174) Workshop on New Methods and Directions in Olefins Polymerization and Oligomerization, Amoco Chemical, Downers Grove, IL, 5/7/98. "Organometallic Chemistry and Olefin Polymerization: Future Directions."
- (173) Symposium on Weakly Coordinating Anions; 215th ACS Nat. Mtg., Dallas, TX, 3/29-4/2/98. "Cationic Aluminum Alkyl Complexes."
- (172) Symposium on Weakly Coordinating Anions; 215th ACS Nat. Mtg., Dallas, TX, 3/29-4/2/98. "Tutorial: Weakly Coordinating Anions and Single-Site Olefin Polymerization Catalysts."
- (171) Eastman Chemical Co., Longview, TX, 3/6/98. "Cationic Transition Metal and Main Group Metal Alkyl Complexes in Olefin Polymerization."
- (170) Exxon Chemicals, Baytown, TX, 3/5/98. "Metallocene Intensive Short Course."

- (169) University of Houston, Houston, TX, 3/3/98. "Cationic Transition Metal and Main Group Metal Alkyl Complexes in Olefin Polymerization."
- (168) Rice University, Houston, TX, 3/2/98. "Cationic Transition Metal and Main Group Metal Alkyl Complexes in Olefin Polymerization."
- (167) Department of Chemical and Biochemical Engineering, University of Iowa, Iowa City, IA, 2/26/98. "Metallocene-Based Olefin Polymerization Catalysis."
- (166) Albemarle Corporation, Baton Rouge, LA, 2/13/98. "Novel Aluminum Compounds for Application in Olefin Polymerization Catalysis."
- (165) University of Missouri at Kansas City, Kansas City, MO, 2/12/98. "Cationic Transition Metal and Main Group Metal Alkyl Complexes in Olefin Polymerization."
- (164) Akron Polymer Lecture Group, University of Akron, Akron, OH, 2/6/98. "Cationic Transition Metal and Main Group Metal Alkyl Complexes in Olefin Polymerization."
- (163) Goodyear Chemical Co., Akron, OH, 2/6/98. "Catalytic Chemistry of Early Transition Metal Carborane Complexes."
- (162) BP Chemicals, Hull, UK, 1/30/98. "Cationic Transition Metal and Main Group Metal Alkyl Complexes in Olefin Polymerization."
- (161) University of Nottingham, Nottingham, UK, 1/29/98. "Catalytic Chemistry of Early Transition Metal Carborane Complexes."
- (160) Leeds University, Leeds, UK, 1/28/98. "Cationic Transition Metal and Main Group Metal Alkyl Complexes in Olefin Polymerization."
- (159) Durham University, Durham, UK, 1/27/98. "Cationic Transition Metal and Main Group Metal Alkyl Complexes in Olefin Polymerization."
- (158) Cambridge University, Cambridge, UK, 1/26/98. "Cationic Transition Metal and Main Group Metal Alkyl Complexes in Olefin Polymerization."
- (157) Gordon Conference on Catalysis, Plymouth, NH, 7/20-7/25/97. "Cationic Aluminum Alkyl Complexes: Transition Metal-Free Olefin Polymerization Catalysts."

- (156) ISOM-12: International Symposium on Olefin Metathesis, St. Augustine, FL, 7/14-7/18/97. "Cationic Aluminum Alkyl Complexes: Transition Metal-Free Olefin Polymerization Catalysts."
- (155) Amoco Chemical Co., Naperville, IL, 6/27/97. "Cationic Aluminum Alkyl Complexes: Transition Metal-Free Olefin Polymerization Catalysts."
- (154) Metallocene Intensive Short Course (Catalyst Consulting Group), Houston, TX, 6/2-6/3/97.
- (153) Bercaw/Green Award Symposium, 213th Nat. ACS Mtg., 4/15/97, San Francisco, CA. "Cationic Aluminum Alkyl Complexes Incorporating Amidinate Ligands."
- (152) University of California at Irvine, Irvine, CA, 4/10/97. "Metallocene-Based Olefin Polymerization Catalysts: Catalyst Synthesis and Models for Key Intermediates."
- (151) University of Nebraska, Lincoln, NE, 3/13/97. "Metallocene-Based Olefin Polymerization Catalysts: Catalyst Synthesis and Models for Key Intermediates."
- (150) BASF Co., Ludwigshafen, Germany, 3/7/97. "Metallocene-Based Olefin Polymerization Catalysts: Catalyst Synthesis and Models for Key Intermediates."
- (149) Hoechst Co., Frankfurt am Main, Germany, 3/6/97. "Metallocene-Based Olefin Polymerization Catalysts: Catalyst Synthesis and Models for Key Intermediates."
- (148) Metallocene Intensive Short Course (Catalyst Consulting Group), Brussels, Belgium, 3/4-3/5/97.
- (147) Eastman Chemical Co., Kingsport, TN, 1/23/97. "Metallocene-Based Olefin Polymerization Catalysts: Catalyst Synthesis and Models for Key Intermediates."
- (146) Metallocene Intensive Short Course (Catalyst Consulting Group), Singapore, 10/3-10/4/96.
- (145) Saudi Basic Industries Corporation (SABIC R&D), Riyadh, Saudi Arabia, 9/24/96. "Recent Advances in Single-Site Catalysis."

- (144) International Workshop on "Recent Advances in Homogeneous Ziegler-Natta Polymerization," Salerno, Italy, 9/19-9/20/96. "Binding and Activation of Olefins by Metallocene Catalysts. Models for the Elusive $\text{Cp}_2\text{Zr(R)}(\text{olefin})^+$."
- (143) Gordon Conference on Organometallic Chemistry, Salve Regina College, Newport, RI; 6/30-7/5/96. "Binding and Activation of Olefins by Metallocene Catalysts. Models for the Elusive $\text{Cp}_2\text{Zr(R)}(\text{olefin})^+$."
- (142) *Metcon 96*-World Metallocene Conference, Houston, TX, 6/12-6/14/96. "Binding and Activation of Olefins by Metallocene Catalysts. Models for the Elusive $\text{Cp}_2\text{Zr(R)}(\text{olefin})^+$."
- (141) Metallocene Intensive Short Course (Catalyst Consulting Group), Houston, TX, 6/11/96.
- (140) 13th International Summer School on Coordination Chemistry, Karpacz, Poland, 6/2-6/8/96. "Binding and Activation of Olefins by Metallocene Catalysts. Models for the Elusive $\text{Cp}_2\text{Zr(R)}(\text{olefin})^+$."
- (139) Florida Catalysis Conference, Palm Coast, FL, 4/15-4/19/96. "Metallocene-Based Olefin Polymerization Catalysts: Models for Key Intermediates."
- (138) International Symposium on "Recent Advances in Olefin Polymerization: Single Site Catalysis"; ACS Nat. Mtg., New Orleans, LA, 3/25-3/26/96. "New Approaches to Metallocene-Based Olefin Polymerization Catalysts."
- (137) University of Illinois at Chicago Circle, Chicago, IL, 3/19/96. "Metallocene-Based Olefin Polymerization Catalysts: Models for Key Intermediates."
- (136) Instituto de Química, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil, 2/29/96. "Metallocene-Based Olefin Polymerization Catalysts: Models for Key Intermediates."
- (135) OPP Petroquímica, Truinha, Brazil, 2/26-2/27/96. "Metallocene Catalysis."
- (134) Columbia University, New York, NY, 12/7/95. "Metallocene-Based Olefin Polymerization Catalysts: Catalyst Synthesis and Models for Key Intermediates."
- (133) Cornell University, Ithaca, NY, 11/20/95. "Metallocene-Based Olefin Polymerization Catalysts: Catalyst Synthesis and Models for Key Intermediates."

(132) Metallocene Intensive Short Course (Catalyst Consulting Group), Brussels, Belgium, 11/3/95.

(131) University of Washington, Seattle, WA, 10/5/95. "Metallocene-Based Olefin Polymerization Catalysts: Catalyst Synthesis and Models for Key Intermediates."

(130) University of Victoria, Victoria, B.C., Canada, 10/4/95. "Metallocene-Based Olefin Polymerization Catalysts: Catalyst Synthesis and Models for Key Intermediates."

(129) Albemarle Corporation, Baton Rouge, LA, 6/2/95. "Synthesis of Ansa Metallocenes via Amine Elimination."

(128) International Symposium on "Early Metal Metallocenes in Synthesis and Catalysis," 78th CSC Conference, Guelph, Ontario, Canada, 5/28-6/1/95. "Metallocene-Based Olefin Polymerization Catalysts: Catalyst Synthesis and Models for Key Intermediates."

(127) *Metcon 95* -World Metallocene Conference, Houston, TX, 5/17-5/19/95. "Efficient Synthesis of Ansa-Metallocene Catalysts."

(126) Goodyear Corporation, Akron, OH, 4/14/95. "Design and Application of Selective Organometallic Reagents and Catalysts."

(125) Harvard/MIT Joint Inorganic Chemistry Seminar, Cambridge, MA, 4/12/95. "Design and Application of Selective Organometallic Reagents and Catalysts."

(124) Northern Illinois University, DeKalb, IL, 3/27/95. "Design and Application of Selective Organometallic Reagents and Catalysts."

(123) Southern Methodist University, Dallas, TX, 11/10/94. "Design and Application of Selective Organometallic Reagents and Catalysts."

(122) Catalysis Society of New Jersey, Somerset, NJ, 10/19/94. "Recent Advances in Metallocene Catalysts."

(121) Mobil Chemical Co., Edison, NJ, 10/19/94. "Design and Application of Selective Organometallic Reagents and Catalysts."

(120) Union Carbide Corporation, Bound Brook, N.J., 10/18/94. "Design and Application of Selective Organometallic Reagents and Catalysts."

- (119) University of Waterloo, Waterloo, Ontario, Canada, 9/22/94. "Design and Application of Selective Organometallic Reagents and Catalysts."
- (118) International Okazaki Conference on "Functions of Electron Deficient Transition Metal Complexes," Japan Institute for Molecular Science, Okazaki, Japan, 8/1-8/3/94. "Stereoselective Olefin Insertion Reactions of Chiral Zirconocene Pyridyl Complexes."
- (117) Mitsubishi Petrochemical Co., Yokkaichi, Japan, 7/29/94. "Recent Advances in Non-Metallocene Olefin Polymerization Catalysts."
- (116) Symposium on "Stereoselectivity of Metallocene-Catalyzed Reactions," XXXth International Conference on Coordination Chemistry, Kyoto, Japan, 7/24 - 7/28/94. "Stereoselective Olefin Insertion Reactions of Chiral Zirconocene Pyridyl Complexes."
- (115) XVIth International Conference on Organometallic Chemistry, University of Sussex, Brighton, UK, 7/10-7/15/94. "Design of Selective Single Site Olefin Polymerization Catalysts."
- (114) Albemarle Corporation, Baton Rouge, LA, 6/17/94. "Stereoselective Synthesis of Ansa-Metallocenes."
- (113) STEPOL-94, International Symposium on "Synthetic, Structural and Industrial Aspects of Stereospecific Polymerization," Milan, Italy, 6/6-6/10/94. "New Cationic Group 4 Metal Alkyl Complexes."
- (112) *Metcon 94* - World Metallocene Conference, Houston, TX, 5/27-5/29/94. "Design of Selective Single Site Olefin Polymerization Catalysts."
- (111) University of Oslo, Oslo, Norway, 5/19/94. "Design and Application of Selective Organometallic Reagents and Catalysts."
- (110) Royal Institute of Technology, Stockholm, Sweden, 5/18/94. "Design and Application of Selective Organometallic Reagents and Catalysts."
- (109) Borealis Polymers Oy, Porvoo, Finland, 5/17/94. "Design of Non-Metallocene Olefin Polymerization Catalysts."

(108) University of Helsinki, Helsinki, Finland, 5/16/94. "Design of Selective Organometallic Catalysts."

(107) Industrial Affiliates Symposium on "Advances in Olefin Polymerization", Northwestern University, Evanston, IL, 5/12-5/13/94. "Design and Application of Selective Organometallic Reagents and Catalysts."

(106) California Institute of Technology, Pasadena, CA, 5/2/94. "Design and Application of Selective Organometallic Reagents and Catalysts."

(105) West Virginia University, Morgantown, WV, 4/15/94. "Design and Application of Selective Organometallic Reagents and Catalysts."

(104) University of Pittsburgh, Pittsburgh, PA, 4/14/94. "Design and Application of Selective Organometallic Reagents and Catalysts."

(103) National Symposium on "Early Transition Metal Organometallic Chemistry," ACS Nat. Mtg., San Diego, CA, 3/13-3/18/94. "Synthesis, Structures and Olefin Polymerization Reactivity of (tfacen)Zr(R)⁺ Complexes."

(102) International Symposium on "Catalyst Design for Tailor-Made Polyolefins," Japan Advanced Institute of Science and Technology, Kanazawa, Japan, 3/10-3/12/94. "Organometallic Models for Olefin Polymerization Catalysts."

(101) Mitsubishi Petrochemical Co., Yokkaichi, Japan, 3/9/94. "Design of Non-Metallocene Olefin Polymerization Catalysts."

(100) Idemitsu Kosan Co., Chiba, Japan, 3/7/94. "Design of Non-Metallocene Olefin Polymerization Catalysts."

(99) University of North Dakota, Grand Forks, N.D., 3/4/94. "Design and Application of Selective Organometallic Reagents and Catalysts."

(98) University of Chicago, Chicago, IL, 2/11/94. "Design and Application of Selective Organometallic Reagents and Catalysts."

(97) Amoco Chemical Company, Naperville, IL, 11/15/93. "Design and Application of Chiral Organometallic Reagents and Catalysts."

- (96) Yale University, New Haven, CT, 11/9/93. "New Electrophilic Metal Alkyl Chemistry."
- (95) "Frontiers in Chemistry Series" Lecture, Case Western University, Cleveland, OH, 11/4/93. "Design of Selective Organometallic Reagents and Catalysts."
- (94) Akzo Chemicals Inc., Dobbs Ferry, NY, 10/1/93. "Metallocene Based Olefin Polymerization Catalysts."
- (93) Schotland Third International Business Forum on Specialty Polyolefins, Houston, TX, 9/21-9/23/93. "New Electrophilic Metal Alkyls Incorporating N₄-Macrocyclic Ligands."
- (92) W. R. Grace Co., Columbia, MD, 8/4/93. "New Organometallic Models for Ziegler-Natta Catalysts."
- (91) *Metcon 93*- World Metallocene Conference, Houston, TX, 5/26-5/28/93. "New Organometallic Models for Ziegler-Natta Catalysts."
- (90) Exxon Chemical Co., Baytown, TX, 5/25/93. "New Electrophilic Metal Alkyls Incorporating N₄-Macrocyclic Ligands."
- (89) University of Alberta, Edmonton, Canada, 4/28/93. "Carbon-Carbon Bond Forming Reactions at Zirconium Centers".
- (88) University of British Columbia, Vancouver, Canada, 4/26/93. "Carbon-Carbon Bond Forming Reactions at Zirconium Centers."
- (87) National Symposium on "Recent Developments in Organometallics Containing Ti, Zr, and Hf," ACS Nat. Mtg., Denver, CO, 3/28 - 4/2/93. "Coupling of CO and Alkynes at Zr(IV) Centers."
- (86) University of California at Berkeley, Berkeley, CA, 3/12/93. "New Electrophilic Metal Alkyl Chemistry."
- (85) Illinois Benedictine College, Naperville, IL, 11/18-11/19/92. "Ziegler-Natta Catalysis."
- (84) National Symposium on "Transition Metal Chemistry in the Assembly of Macromolecules & Supramolecular Systems," Midwest Regional ACS Meeting, Lawrence, KS, 11/4-11/6/92. "New Organometallic Models for Ziegler-Natta Catalysts."

- (83) National Symposium on "Chemistry of Electrophilic Metal Complexes," ACS Nat. Mtg., 8/26-8/28/92, Washington, DC. "Zirconium-Mediated Co-Oligomerization of Carbon Monoxide and Acetylenes."
- (82) Quantum Chemical Corporation, Cincinnati, OH, 8/17/92. "New Organometallic Models for Ziegler-Natta Catalysts."
- (81) Mobil Chemical Company, Edison, N.J., 8/11/92. "New Chemistry of Electrophilic Metal Alkyls."
- (80) Université de Bordeaux, Talence, France, 7/2/92. "Chemistry of $\text{Cp}_2\text{Zr(R)(L)}^+$ Complexes: Models for Ziegler-Natta Catalysts."
- (79) Laboratoire de Chimie de Coordination, Centre National de la Recherche Scientifique, Toulouse, France, 6/30/92. "Stereoselective C-H Activation/C-C Bond Forming Catalysis."
- (78) Université de Bourgogne, Dijon, France, 7/8/92. "Recent Advances in Olefin Polymerization Catalysis."
- (77) Université de Bretagne Occidentale, Brest, France, 6/19/92. "Catalytic, Stereoselective C-H Activation/C-C Bond Forming Chemistry."
- (76) Université de Rennes, Rennes, France, June-July 1992. Series of 4 research lectures: (i) "Recent Advances in Olefin Polymerization Catalysis." (ii) "Catalytic, Stereoselective C-H Activation/C-C Bond Forming Chemistry." (iii) "Chemistry of $\text{Cp}_2\text{Zr(R)(L)}^+$ Complexes: Models for Ziegler-Natta Catalysts." (iv) Electrophilic Metal Alkyls Incorporating $\text{C}_2\text{B}_9\text{H}_{11}2^-$ (dicarbollide) Ligands."
- (75) Brookhaven National Laboratory, Upton, NY., 5/20/92. "New Electrophilic Metal Alkyls Incorporating Carborane Ligands."
- (74) Union Carbide Corporation, Bound Brook, NJ, 5/19/92. "Chemistry of New Electrophilic Metal Alkyl Complexes."
- (73) Amoco Chemical Company, Naperville, IL, 4/23/92. "Neutral, Group 4 Metallocene-like Olefin Polymerization Catalysts."

- (72) International Symposium on "Advances in Olefin Polymerization," 4/12-4/17/92, Lyon, France. "Chemistry of New Electrophilic Metal Alkyl Complexes."
- (71) National Symposium on "Design of Transition Metal Catalysts for the Synthesis of Inorganic, Organometallic, and Organic Polymers," ACS Nat. Mtg., 4/5-4/10/92, San Francisco, CA. "New Electrophilic Metal Alkyls Incorporating N4-Macrocyclic Ligands."
- (70) National Symposium on "Design of Selective Organometallic Reactions and Catalysts", ACS Nat. Mtg., 4/5-4/10/92, San Francisco, CA. "Zirconium-Mediated C-C Bond Formation Chemistry."
- (69) Ethyl Corporation, Baton Rouge, LA, 11/8/91. "New Organometallic Models for Ziegler-Natta Catalysis."
- (68) University of Konstanz, Konstanz, F.R.G., 9/14/91. "Carborane Ligands In Early Metal Chemistry."
- (67) European Science Foundation International Conference on New Perspectives in Organometallic Chemistry, Kreuth, F.R.G. 9/15-9/20/91. "New Electrophilic Metal Alkyl Complexes."
- (66) University of East Anglia, Norwich, U.K., 7/3/91. "The Chemistry of New Electrophilic Metal Alkyl Complexes."
- (65) Inorganic Chemistry Laboratory, Oxford University, Oxford, U.K., 7/11/91. "New Organometallic Chemistry."
- (64) DOE Conference on Organometallic Chemistry and Homogeneous Catalysis, Madison, WI, 6/3-6/5/91. "Generation and Fate of $\text{Cp}_2\text{Ti}(\text{CH}_2\text{Ph})^+$ Species. Competition Between Ti-C Homolysis and CH_3CN Insertion."
- (63) National Symposium on "High Oxidation State Organometallics," ACS Nat. Mtg., Atlanta, GA, 4/14-4/19/91. "Productive Ligand C-H Activation Chemistry of $\text{Cp}_2\text{Zr}(\text{R})(\text{L})^+$ Complexes."
- (62) National Symposium on "Stereochemistry and Mechanism of Homogeneous Polymerization Reactions", ACS Nat. Mtg., Atlanta, GA, 4/14-4/19/91. "Influence of Distorted Alkyl Group Structures on the Reactivity of $\text{Cp}'_2\text{Zr}(\text{R})(\text{L})^+$ Complexes."

- (61) University of South Carolina, Columbia, SC, 4/12/91. "Synthetic and Catalytic Applications of $\text{Cp}_2\text{Zr(R)(L)}^+$ Complexes."
- (60) 9th Biennial Carl S. Marvel Symposium. "Organometallic Chemistry: Synthesis, Catalysis, and New Directions," Tucson, Arizona, 3/11-3/13/91. "New Chemistry of Electrophilic Metal Alkyls."
- (59) Grinnell College, Grinnell, IA, 2/20/91. "Recent Advances in Organometallic Chemistry at Iowa."
- (58) University of Waterloo, Waterloo, Ontario, Canada, 12/14/90. "New Approaches to Catalyst Design."
- (57) New York Academy of Sciences, New York, NY, 12/12/90. "Catalytic Polymerization and C-H Activation Chemistry of $\text{Cp}_2\text{Zr(R)(L)}^+$ Complexes."
- (56) Mobil Chemical Company, Edison, NJ, 9/28/90. "Recent Advances in Organozirconium Chemistry."
- (55) Symposium on "Electrophilic Metal Complexes," ACS Central Regional Meeting, Saginaw, MI, 6/8/90. "Catalytic Polymerization and C-H Activation Chemistry of $\text{Cp}_2\text{Zr(R)(L)}^+$ Complexes."
- (54) Union Carbide Research Innovation Symposium, Charleston WV, 5/18-5/19/90. "Chemistry of New d^0 Metal Alkyl Compounds."
- (53) National Symposium on "Controlled Polymerization," ACS National Meeting, Boston, MA, 4/22-4/27/90. "Cationic $\text{Cp}_2\text{Zr(R)(L)}^+$ Complexes as Models for Metallocene-Based Ziegler-Natta Catalysts."
- (52) National Symposium on "New Science in Homogeneous Transition Metal Catalyzed Reactions," ACS National Meeting, Boston, MA, 4/22-4/27/90. "Catalytic Polymerization and C-H Activation Chemistry of $\text{Cp}_2\text{Zr(R)(L)}^+$ Complexes."
- (51) Indiana University, Bloomington, IN, 3/1-3/2/90. Series of 2 lectures: (i) "Productive Ligand C-H Activation Chemistry of $\text{Cp}_2\text{Zr(R)(L)}^+$ Complexes." (ii) "Chemistry of Cationic d^0 Metal Alkyl Complexes: Implications for Ziegler-Natta Olefin Polymerization."

- (50) Quantum Chemical Corporation, Morris, IL, 2/28/90. "Chemistry of Cationic Early Metal Alkyl Complexes."
- (49) 3M Company, Minneapolis, MN, 1/11/90. "New Electrophilic Metal Alkyl Chemistry."
- (48) University of Minnesota, Minneapolis, MN, 1/10/90. "Chemistry of Cationic d^0 Metal Alkyl Complexes: Implications for Ziegler-Natta Olefin Polymerization."
- (47) International Symposium on "Strategies in Inorganic Synthesis: The First 50 Years," International Chemical Congress of Pacific Basin Societies, Honolulu, Hawaii, 12/17-12/22/89. "Synthesis and Catalytic Chemistry of Cationic Zr(IV) Alkyl Complexes."
- (46) Seton Hall University, South Orange, NJ, 11/21/89. "Catalytic Chemistry of Cationic Zirconium Complexes."
- (45) Koninklijke/Shell Laboratorium, Shell Research B.V., Amsterdam, Netherlands, 10/3/89. "Catalytic Chemistry of $Cp_2Zr(R)(L)^+$ Complexes."
- (44) University of Groningen, Groningen, Netherlands, 10/2/89. "Catalytic Chemistry of $Cp_2Zr(R)(L)^+$ Complexes."
- (43) International EUCHEM Conference on "New Perspectives in Organometallic Chemistry," Königstein, F.R.G., 9/25-9/29/89. "Catalytic Polymerization and C-H Activation Chemistry of $Cp_2Zr(R)(L)^+$ Complexes."
- (42) National Symposium on "Mechanisms in Organometallic Chemistry," ACS Nat. Mtg., Miami, FL, 9/10-9/15/89. "Mechanism of β -H Elimination of $Cp_2Zr(R)(L)^+$ Complexes."
- (41) National Symposium on "Novel Preparation and Conversion of Light Olefins," ACS Nat. Mtg., Miami, FL, 9/10/89. "Zirconium-Catalyzed Coupling of α -Picoline with Olefins."
- (40) International Symposium on "Interfaces in Metal Complex Chemistry," Rennes, France, 7/9 - 7/14/89. "Catalytic Polymerization and C-H Activation Chemistry of $Cp_2Zr(R)(L)^+$ Complexes."
- (39) Universität Würzburg, Würzburg, F.R.G., 7/5/89. "Synthesis and Chemistry of Cationic Zirconium Alkyls."

- (38) Universität Konstanz, Konstanz, F.R.G., 7/3/89. "Synthesis and Chemistry of Cationic Zirconium Alkyls."
- (37) ETH, Zurich, Switzerland, 6/30/89. "Synthesis and Chemistry of Cationic Zirconium Alkyls."
- (36) NSF Workshop on Organometallic Chemistry, La Jolla, CA, 6/2-6/5/89. "Chemistry of $\text{Cp}_2\text{Zr(R)(L)}^+$ Complexes."
- (35) Iowa State University, Ames, IA, 5/4/89. "New Catalytic Chemistry of Zirconium."
- (34) Iowa Academy of Sciences Annual Meeting, Storm Lake, IA, 4/21-4/22/89. "Chemistry of $\text{Cp}_2\text{Zr(R)(L)}^+$ Olefin Polymerization Catalysts."
- (33) University of Nevada, Reno, NE, 3/30/89. "New Organometallic Chemistry."
- (32) Luther College, Decorah, IA, 3/13/89. "Organometallic Chemistry at Iowa."
- (31) International Symposium on "Frontiers in Ziegler-Natta Catalyst Chemistry", SW Regional ACS Meeting, Corpus Christi, TX, 11/30-12/2/88. "Chemistry of $\text{Cp}_2\text{Zr(R)(L)}^+$ Olefin Polymerization Catalysts."
- (30) Gordon Conference on Organometallic Chemistry, Newport, RI, 6/27 - 7/1/88. "Cationic Metal Alkyl Complexes."
- (29) Symposium on "Olefin Polymerization by Highly Electrophilic Organometallic Complexes," Central Regional ACS Meeting, Morgantown, WV, 6/1-6/3/88. "Olefin Polymerization By Cationic d^0 Metal Alkyl Complexes."
- (28) Florida Conference on Catalysis, Palm Coast, FL, 5/2-5/6/88. "Olefin Polymerization By Cationic d^0 Metal Alkyl Complexes."
- (27) University of Illinois, Champaign-Urbana, IL, 4/28/88. "Chemistry of $\text{Cp}_2\text{Zr(R)}^+$ Species."
- (26) Northwestern University, Evanston, IL, 4/27/88. "Chemistry of $\text{Cp}_2\text{Zr(R)}^+$ Species."
- (25) University of Wisconsin, Madison, WI, 4/25/88. "Chemistry of $\text{Cp}_2\text{Zr(R)}^+$ Species."
- (24) Chevron Chemical Co., Richmond, CA, 4/6/88. "New Approaches to Catalyst Design."

- (23) University of Washington, Department of Materials Science, Seattle, WA, 2/17/88. "New Approaches to Catalyst Design."
- (22) Stanford University, Stanford, CA, 2/12/88. "Organometallic Models for Ziegler-Natta Catalysts."
- (21) California Institute of Technology, Pasadena, CA, 2/10/88. "Organometallic Models for Ziegler-Natta Catalysts."
- (20) University of Southern California, Los Angeles, CA, 2/9/88. "Organometallic Models for Ziegler-Natta Catalysts."
- (19) Exxon Chemical Co., Baytown, TX, 1/8/88. "New Catalyst Chemistry."
- (18) Colorado State University, Ft. Collins, CO, 10/30/87. "Recent Advances in Organozirconium Chemistry."
- (17) University of Colorado, Boulder, CO, 10/29/87. "Recent Advances in Organozirconium Chemistry."
- (16) Colorado State University, Ft. Collins, CO, 10/30/87. "Recent Advances in Organozirconium Chemistry."
- (15) "State-of-the-Art" Symposium on Catalysis and Organometallic Chemistry, Nat. ACS Mtg., New Orleans, LA, 9/1/87. "Olefin Polymerization by Cationic d^0 Alkyl Complexes."
- (14) NSF Workshop on Organometallic Chemistry, Asilomar, CA, 6/7- 6/9/87. "Chemistry of New Cationic Metal Alkyls."
- (13) Lewis and Clark College, Portland, OR, 4/13/87. "New Organometallic Chemistry"
- (12) Portland State University, Portland, OR, 4/12/87. "New Organometallic Chemistry"
- (11) Reed College, Portland, OR, 4/11/87. "New Organometallic Chemistry"
- (10) National Symposium on "Metals in Olefin Polymerization", Nat. ACS Mtg., Denver, CO, 4/5-4/10/87. "Ethylene Polymerization by $Cp_2Zr(R)^+$ Complexes."

- (9) Dow Chemical Company, Freeport, TX, 4/3/87. "Ethylene Polymerization by $\text{Cp}_2\text{Zr(R)}^+$ Complexes."
- (8) University of Washington, Seattle, WA, 11/14/86. "Organometallic Models for Ziegler-Natta Olefin Polymerization Catalysts."
- (7) University of Oregon, Eugene, OR, 4/30/86. "Reactive Cationic Organozirconium Complexes."
- (6) Exxon Chemical Company, Baytown, TX, 5/22/86, "Organometallic Models for Ziegler-Natta Olefin Polymerization Catalysts."
- (5) University of California at San Diego, La Jolla, CA, 4/28/86. "Reactive Cationic Organozirconium Complexes."
- (4) San Diego State University, San Diego, CA, 4/25/86. "Reactive Cationic Organozirconium Complexes."
- (3) University of California at Irvine, Irvine, CA, 4/24/86. "Reactive Cationic Organozirconium Complexes."
- (2) National ACS Meeting, New York, NY, 4/18/86. "Synthesis and Characterization of $\text{Cp}_2\text{Zr(R)(L)}^+$ Complexes."
- (1) Washington State University, Chemical Engineering Department, 2/17/86. "Homogeneous Catalysis."